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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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GLENN M. KUBOTA
MORRISON & FOERSTER LLP
555 WEST FIFTH STREET
SUITE 3500
LOS ANGELES, CA 90013-1024

EXAMINER


LIN, KENNY S

ART UNIT PAPER NUMBER

2154

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|--|--|
| Office Action Summary | Application No. 09/858,260 | Applicant(s) SHAH ET AL.  | |
| | Examiner Kenny Lin | Art Unit 2154 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2001.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-96 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-96 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/6/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-96 are presented for examination.
2. The IDS submitted on October 6, 2003 have been considered by the examiner.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9-11, 21-23, 33-35, 37-48, 57-59, 69-71, 81-83 and 85-96 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The following terms lack proper antecedence basis:

- i. Claims 9, 21, 33, 45, 57, 69, 81 and 93, "the root directory" (i.e., the root directory was never introduced in the previous claims);
- ii. Claims 11, 23, 35, 47, 59, 71, 83 and 95, "the new root directory" (i.e., the new root directory was never introduced in the previous claims);

- b. The following terms contain errors:

- i. Claim 37, line 5 – a user mode client (i.e., do you mean "a user-mode client", please be consistent with the terms throughout the claims);
- ii. Claim 85, line 5 – a user mode client (i.e., do you mean "a user-mode client", please be consistent with the terms throughout the claims).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-4, 13-16, 25-28, 37-40, 49-52, 61-64, 73-76 and 85-88 are rejected under 35 U.S.C. 102(e) as being anticipated by Schmeidler et al (hereafter Schmeidler), US 6,374,402.

7. As per claims 1 and 49, Schmeidler taught the invention as claimed including a process for client-side retrieval, storage, and execution of application programs and other related data streamed from a server across a computer network to a client system in a computer environment, comprising the steps of:

- a. Providing a streaming file system on said client (col.2, lines 29-34, col.8, lines 28-33, col.9, lines 11-12, col.10, lines 22-30);

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- b. Wherein said streaming file system appears to said client to contain the installed application program (col.3, lines 2-11, col.10, lines 22-30);
- c. Wherein said streaming file system receives all requests from local processes for application program code or data that are part of the application (col.10, lines 39-59, col.16, lines 39-45);
- d. Providing a persistent cache on said client (col.16, lines 14-33, col.17, lines 18-25);
- e. Wherein said streaming file system satisfies requests for application program code or data by retrieving it from said persistent cache stored in a native file system or by retrieving it directly from said server (col.2, lines 57-67, col.10, lines 39-65, col.11, lines 30-36, col.16, lines 14-49, col.17, lines 33-41); and
- f. Wherein application program code or data retrieved from said server is placed in said persistent cache for reuse (col.16, lines 14-33, col.17, lines 18-25).

8. As per claims 13 and 61, Schmeidler taught the invention as claimed including a process for client-side retrieval, storage, and execution of application programs and other related data streamed from a server across a computer network to a client system in a computer environment, comprising the steps of:

- a. Providing a kernel-mode streaming file system driver on said client (col.2, lines 29-34, col.9, lines 11-12, col.10, lines 22-30);
- b. Providing a user-mode client on said client (col.10, lines 39-59, col.11, lines 17-29);

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- c. Wherein said streaming file system receives all requests from local processes for application program code or data that are part of the application (col.10, lines 39-59, col.11, lines 17-29, col.16, lines 39-45);
- d. Providing a persistent cache on said client (col.16, lines 14-33, col.17, lines 18-25);
- e. Wherein requests made to said streaming file system are directed to said user-mode client or retrieved from said persistent cache (col.10, lines 6-10, 39-59, col.14, lines 16-67, col.15, lines 1-40);
- f. Wherein said user-mode client handles the application program code and data streams from said server and sends the results back to said streaming file system driver (col.10, lines 39-65, col.11, lines 30-36, col.14, lines 16-67, col.15, lines 1-40); and
- g. Wherein application program code or data retrieved from said server is placed in said persistent cache for reuse (col.16, lines 14-33, col.17, lines 18-25).

9. As per claims 25 and 73, Schmeidler taught the invention as claimed including a process for client-side retrieval, storage, and execution of application programs and other related data streamed from a server across a computer network to a client system in a computer environment, comprising the steps of:

- a. Providing a streaming block driver on said client (col.9, lines 11-12, col.10, lines 22-30, col.16, lines 9-33);

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- b. Wherein said block driver provides the abstraction of a physical disk to a native file system already installed on the client operating system (col.10, lines 22-30, 39-66, col.11, lines 37-48, col.16, lines 9-33);
- c. Providing a persistent cache on said client (col.16, lines 14-33, col.17, lines 18-25);
- d. Wherein said block driver receives requests for physical block reads and writes from local processes which it satisfies out of said persistent cache on a standard file system that is backed by a physical disk drive (col.10, lines 39-59, col.16, lines 39-45, col.14, lines 16-67, col.15, lines 1-40, col.16, lines 9-49); and
- e. Wherein requests that cannot be satisfied by said persistent cache are sent to said server (col.10, lines 39-65, col.11, lines 30-36, col.16, lines 42-57).

10. As per claims 37 and 85, Schmeidler taught the invention as claimed including a process for client-side retrieval, storage, and execution of application programs and other related data streamed from a server across a computer network to a client system in a computer environment, comprising the steps of:

- a. Providing a disk driver on said client (col.2, lines 29-34, col.9, lines 11-12, col.10, lines 22-30);
- b. Providing a user-mode client on said client (col.10, lines 39-59, col.11, lines 17-29);

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- c. Wherein said disk driver sends all file requests that it receives to said user-mode client (col.10, lines 6-10, 39-59, col.11, lines 17-29, col.14, lines 16-67, col.15, lines 1-40);
- d. Providing a persistent cache on said client (col.16, lines 14-33, col.17, lines 18-25); and
- e. Wherein said user-mode client attempts to satisfy said file requests from said program cache or by making requests from said server (col.10, lines 39-65, col.11, lines 30-36, col.14, lines 16-67, col.15, lines 1-40, col.16, lines 9-49).

11. As per claims 2, 14, 26, 38, 50, 62, 74 and 86, Schmeidler taught the invention as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler further taught said persistent cache is encrypted with a key not permanently stored on said client to prevent unauthorized use or duplication of application code or data; and wherein said key is sent to said client upon application startup from said server and said key is not stored in the application program's persistent storage area in said persistent cache (col.2, lines 47-55, col.9, lines 52-67, col.10, lines 1-8, col.16, lines 33-36, col.22, lines 45-67, col.23, lines 1-19).

12. As per claims 3, 15, 27, 39, 51, 63, 75 and 87, Schmeidler taught the invention as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler further taught said client initiates the prefetching of application program code and data from said server (col.15, lines 14-16); and wherein said client inspects program code or data file requests and consults the contents of said persistent cache as well as historic information about application program fetching patterns and

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uses this information to request additional blocks of application program code and data from said server that said client expects will be needed soon (col.15, lines 9-40).

13. As per claims 4, 16, 28, 40, 52, 64, 76 and 88, Schmeidler taught the invention as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler further taught said server initiates the prefetching of application program code and data for said client; and wherein said server examines the patterns of requests made by said client and selectively returns to said client additional blocks that said client did not request but is likely to need soon (col.15, lines 9-40).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 5, 17, 29, 41, 53, 65, 77 and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler, in view of Braun et al (hereafter Braun), US 6,636,961.

16. As per claims 5, 17, 29, 41, 53, 65, 77 and 89, Schmeidler taught the invention substantially as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler further taught wherein unmodified files are retrieved from said server (col.2, lines 57-67, col.10, lines 39-65, col.17, lines 33-41). Schmeidler did not specifically teach the step of:

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- a. Providing a client-to-client communication mechanism that allows local application customization to migrate from one client machine to another without involving server communication;
- b. Wherein when a user wishes to run an application on a second machine but wishes to retain customization made previously on the first, said client-to-client mechanism contacts the first machine to retrieve customized files and other customization data.

17. Braun taught to provide a client-to client communication mechanism that allows local application customization to migrate from one client machine to another without involving server communication; wherein when a user wishes to run an application on a second machine but wishes to retain customization made previously on the first, said client-to-client mechanism contacts the first machine to retrieve customized files and other customization data (col.1, lines 66-67, col.2, lines 1-4, 16-21, col.3, lines 6-17, 34-54). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler and Braun because Braun's teaching of obtaining customized files or data from a previously used client helps the users of Schmeidler's system to eliminate the need from customizing the files again in the different client computer (see Braun, col.1, lines 8-12, 29-34).

18. Claims 6, 18, 30, 42, 54, 66, 78 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler.

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19. As per claims 6, 18, 30, 42, 54, 66, 78 and 90, Schmeidler taught the invention substantially as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler further taught the step of:

- a. Wherein said streaming file system is a copy-on-write file system that allows applications to write configuration or initialization files where they want to without rewriting the application, and without disturbing the local customization of other clients (col.16, lines 25-33, col.17, lines 1-37);
- b. Wherein each block of data in said persistent cache is marked as clean or dirty (col.16, lines 53-63, data wish to retain and data unwanted);
- c. Wherein pages marked as dirty have been customized by the application program and cannot be removed from the cache without losing client customization (col.16, lines 53-63, write-through tagged);
- d. Wherein pages marked as clean may be purged from the cache because they can be retrieved again from said server (col.16, lines 53-63).

20. Schmeidler did not specifically teach or provide a cache index wherein said cache index indicates which pages in said persistent cache are clean and dirty; and wherein said copy-on-write file system references said cache index to determine if a page is clean or dirty. However, Schmeidler's teaching of tagging each individual file and data with a write-through tag as references indicating whether the file is clean or dirty contribute the similar functionalities as using the claimed cache index. It would have been obvious to one of ordinary skill in the art at

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the time the invention was made to combine the teachings of Schmeidler and further uses tagging technique in identifying the marked files instead of a cache index method.

21. Claims 7, 19, 31, 43, 55, 67, 79 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler, in view of Kelly et al (hereafter Kelly), US 5,210,850.

22. As per claims 7, 19, 31, 43, 55, 67, 79 and 91, Schmeidler taught the invention substantially as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler did not specifically teach the steps of: marking specific files in said persistent cache as not modifiable; wherein said streaming file system does not allow any data to be written to said specific files that are marked as not modifiable; and wherein attempts by any processes to mark any of said specific files as modifiable will not succeed. However, it would have been obvious for an authorized one to make files in cache write protected. Kelly taught that specific files in the persistent cache can be set to be write protected where modification to the file is not allowed (col.4, lines 36-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler and Kelly because Kelly's teaching of setting write protected status protects the files in Schmeidler's system from accidental over writes.

23. Claims 8, 20, 32, 44, 56, 68, 80 and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler, in view of Blumenau, US 6,510,462.

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24. As per claims 8, 20, 32, 44, 56, 68, 80 and 92, Schmeidler taught the invention substantially as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler further taught to provide checksums of application code and data (col.16, lines 5-8). Schmeidler did not specifically teach the steps of:

- a. Maintaining checksums of application code and data in said persistent cache;
- b. Wherein when a block of code or data is requested by a local process said streaming file system computes the checksum of the data block before it is returned to the local process; and
- c. Wherein if a computed checksum does not match the checksum stored in said persistent cache the cache entry is invalidated and a fresh copy of the page is retrieved from said server.

25. Blumenau taught to use checksums of a streamed application code from a cache, compare the checksum to a reference checksum to see if they matches or not, and to determine the use of the application code according the to comparison (abstract, col.2, lines 42-67, col.3, lines 1-6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler and Blumenau because Blumenau's teaching of using checksum helps Schmeidler's system to ensure that the proper application code or data requested is retrieved.

26. Claims 9, 21, 33, 45, 57, 69, 81 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler, in view of Carothers et al (hereafter Carothers), US 6,587,857.

27. As per claims 9, 21, 33, 45, 57, 69, 81 and 93, Schmeidler taught the invention substantially as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler did not specifically teach the steps of:

- a. Assigning each file in an application program a unique identifier;
- b. Wherein files that are changed or added in an application upgrade are given new identifiers never before used for that application program;
- c. Wherein files that are unchanged retain the same number; and
- d. Wherein directories whose contents change are also considered change. If any file changes, this will cause its parent to change, all the way up to the root directory.

28. Carothers taught to assign unique identifiers to each files, assign new unique identifiers when the files are changed, and retain same identifier for unchanged files (col.6, lines 30-34, col.7, lines 27-31, col.8, lines 23-36, col.9, lines 48-53). Carothers further taught that contents change are also considered change for directories (col.7, lines 27-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler and Carothers because Carothers' teaching of using unique identifiers for each file help Schmeidler's system to assign version identifications for the files of the application program for easy version management.

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29. Claims 10-11, 22-23, 34-35, 46-47, 58-59, 70-71, 82-83 and 94-95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler and Carothers as applied to claims 9, 21, 33, 45, 57, 69, 81 and 93 above, and further in view of Mohammed, US 6,418,555.

30. As per claims 10, 22, 34, 46, 58, 70, 82 and 94, Schmeidler and Carothers taught the invention substantially as claimed in claims 9, 21, 33, 45, 57, 69, 81 and 93. Schmeidler and Carothers did not specifically teach when an application upgrade occurs said client is given a new root directory for the application program by said server; wherein said new root directory is used by said streaming file system to search for files in the application program; wherein files that do not change can be reused from said persistent cache without downloading them again from said server; and wherein files with new identifiers are retrieved from said server.

Mohammed taught to invoke upgrades and store files in the application program in a separate storage media (col.2, lines 47-49) and wherein files that do not change can be reused from said persistent cache without downloading them again from the server and retrieve new files from the server (col.2, lines 60-67, col.3, lines 1-9, col.4, lines 19-49, col.6, lines 29-37, 42-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler, Carothers and Mohammed because Mohammed's teaching of upgrading application help Schmeidler and Carothers' system to automatically detect new versions of application program and perform automatic upgrades (see Mohammed, col.1, lines 31-43, col.2, lines 52-58, col.7, lines 11-16).

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31. As per claims 11, 23, 35, 47, 59, 71, 83 and 95, Schmeidler and Carothers taught the invention substantially as claimed in claims 9, 21, 33, 45, 57, 69, 81 and 93. Schmeidler and Carothers did not specifically teach said application upgrades can be marked as mandatory by said server causing the new root directory for the application program to be used immediately; and wherein said streaming file system contacts said server when an application program is started in order to receive any application upgrades. Mohammed taught to bypass user interaction during application upgrades and store files in the application program in a separate storage media (col.2, lines 47-49, col.5, lines 12-16) and said streaming file system contacts the server when an application program is started in order to receive any application upgrades (col.2, lines 64-67, col.3, lines 1-4, col.6, lines 18-23, 46-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler, Carothers and Mohammed because Mohammed's teaching of upgrading application help Schmeidler and Carothers' system to automatically detect new versions of application program and perform automatic upgrades (see Mohammed, col.1, lines 31-43, col.2, lines 52-58, col.7, lines 11-16).

32. Claims 12, 24, 36, 48, 60, 72, 84 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmeidler, in view of Metz et al (hereafter Metz), US 5,666,293.

33. As per claims 12, 24, 36, 48, 60, 72, 84 and 96, Schmeidler taught the invention substantially as claimed in claims 1, 13, 25, 37, 49, 61, 73 and 85. Schmeidler did not specifically teach said server broadcasts an application program's code and data and any client

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that is interested in that particular application program stores the broadcasted code and data for later use. Metz taught to broadcast application program codes and any client that is interested in the particular application program stores the broadcasted code and data for later use (col.4, lines 39-56, col.5, lines 5-15, 51-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Schmeidler and Metz because Metz's teaching of broadcasting application enables all the users of Schmeidler's system to obtain the desired application code or data for upgrades.

Conclusion

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eylon et al, US 2001/0034736.

Willems, US 6,694,510.

Saboff, US 6,154,878.

Chernock et al, US 6,772,209.

Delo et al, US 6,370,686.

35. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenny Lin whose telephone number is (703) 305-0438. The examiner can normally be reached on 8 AM to 5 PM Tue.-Fri. and every other Monday..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ksl
September 3, 2004

Allen Jan L
9/3/04